REMARKS

Claims 1-40 are pending in the subject application. The only standing rejection of the claims is a rejection under 35 USC §112, first paragraph, on the alleged basis that the claims are not enabled. Applicants respectfully traverse. Claim 1 is directed to biocompatible particles for delivery of a vaccine to the pulmonary system. At page 4, line 14 of the subject application, applicants cite to patents that enable the delivery of agents to the lung. Thus, particles designed for deep delivery into the lungs are enabled by the subject applications through incorporation by reference of these patents. Example 3 of the subject application describes one example of how vaccine particles may be made. Applicants attach hereto Attachment A which is a simple study involving the administration of a recombinant Modified Vaccinia Ankara (MVA) vaccine to mice via the respiratory tract. Mice were immunized with a recombinant MVA encoding influenza virus antigens by intranasal administration. Mice administered with the immunizing agent were protected against challenge by influenza virus, whereas mice not subjected to the immunizing agent contracted influenza and died. Although the MVA administered via the respiratory tract in the study was not carried by particles, the study demonstrates that delivery of an immunizing agent via the respiratory tract is a viable administration route for vaccines. Coating or otherwise tethering or conjugating an immunizing agent such as a recombinant vector with a biocompatible particle as defined in claim 1 would undoubtedly result in protection against the pathogen to which the immunizing agent is targeted.

Applicants respectfully assert that there is no logical or scientific basis to doubt that administration of particles with an immunizing agent known to effectuate a protective immune response would also successfully confer a protective immune response when delivered in conjunction with biocompatible particles. Applicants respectfully request reconsideration of the 35 USC §112, first paragraph rejection.

All grounds for rejection or objection having been addressed and overcome herein, it is respectfully urged that this application is in condition for allowance. Applicants request that the Examiner call the undersigned if clarification is needed on any aspect of this Reply, or if the

Examiner believes a telephonic interview would expedite the prosecution of the subject application.

Respectfully submitted,

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CERTIFICATE OF MAILING

I HEREBY CERTIFY that this Response Under 37 CFR 1.116 is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Commissioner for Patents, P. O. Box 1450, Mail Stop RCE, Arlington, Virginia 22313-1450 23rd day of August 23, 2004.

Alicia Hoffman

ABSTRACT for "IS GATOR-VAX THE END OF THE FLU"

by Ethan Bender

I did my Science Project on Influenza in mice and also to show that there is a new vaccine being tested for Influenza. I'm hoping that this one will be more effective than the Standard Vaccine. I had a total of 5 groups of mice: Negative Control, Positive Control, Standard Influenza Vaccine, Gator-Vax (Oral), Gator-Vax (Intranasal).

I gave an inactive vaccine to the Negative Control group and gave them the Influenza virus. This group is to mainly show that the Influenza virus can kill.

I gave a milder virus to Positive Control group before I gave them the more lethal virus.

I gave the current, more common vaccine (Standard Vaccine) to the Standard Influenza Vaccine mice and then I gave the mice the virus. This is to see if the new vaccine is better than the old one.

I'm testing the new vaccine called Gator-Vax, that is being developed by Dr. Bradley S. Bender and Dr. Parker Small. I gave this vaccine orally and also intranasally. I then challenged them with the lethal virus.

Hypothesis: I think that for the Negative Control they will all die and prove the virus can kill. I think there will be no effect of the influenza on the Positive Control. I think the Standard Vaccine group will become sick but not die. I hypothesize that both the Gator-Vax (Oral) and Gator-Vax (Intranasal) will not become sick.

Conclusion: All my hypotheses were correct. For the Negative control, they all died proving the virus was lethal. There was no effect on the Positive control after the challenge. The mice that received the Standard vaccine became infected, but didn't die. Neither the Gator-Vax (Oral) nor the Gator-Vax (Intranasal) became sick or died.

Three Major References:

Bender, Bradley S.; Rowe, Cheryl A.; Taylor, Scott F.; Wyatt, Linda S.; Moss, Bernard; Small, Parker A. Oral Immunization with a Replication-Deficient Recombinant Vaccinia Virus Protects Mice against Influenza. *Journal of Virology*, 1996; Volume 70: pp. 6418-6424.

Betts, Robert F. and Douglas, R. Gordon. Principles and Practice of Infectious Diseases-Third Edition. New York: Churchill Livingstone, 1990.

Meitin, Catherine A.; Bender, Bradley S.; Small, Parker A. Enteric Immunization of Mice Against Influenza with Recombinant Vaccinia. *Proceedings of the National Academy of Science*, 1994; Volume 91: pp 11187-11191.

PROCEDURE

11/23/96- Mice were divided into groups and placed into different cages of three to four each-3 in the Control Groups, 4 in the rest of the groups and then weighed with a Harvard Balance Scale. The mice were divided into numbers 1,2,3 or 1,2,3,4 depending on the number of mice in each group. They were identified by this code: 1 hole punch in right ear=1; 2 hole punches in right ear=2; 1 ear punch in left ear=3; 2 ear punches in left ear= 4. The mice were anesthetized by injecting with syringe .2 cc of Ketamine into their peritoneal cavity. The Negative control received 100 microliters of MVA intranasally. Positive Control received a mild H1N1 influenza virus. Gator-Vax (Oral) received an intraperitoneal injection of a combination of cimetidine and cholecystokinin to inhibit stomach acid and empty the gallbladder. One hour later they then received MVA-HA-NP by a 2 inch blunt oral feeding tube. Gator-Vax (Intranasal) received 100 microliters of MVA-HA-NP. Standard Influenza Vaccine received 75 microliters of a killed influenza virus vaccine.

11/24/96-12/1/96- Mice were weighed frequently to determine whether or not the inoculations caused them to become ill.

12/10/96- Same procedure as 11/23/96 except for dividing mice into groups and seperate cages and we did not give Positive Control the mild virus again.

12/25/96-Same procedure as 12/10/96.

1/1/97- The animals were again anesthetized with 200 microliters of Ketamine. All animals received 40 microliters of deadly H1N1 virus intranasally.

1/3/97-1/8/97- Mice were weighed frequently to determine whether became infected and started showing symptoms of illness.

MAJOR OBSERVATIONS

11/24/96- 1 mouse in the negative control was found dead. I hypothesize that this was a result of the anesthetic. He never woke up.

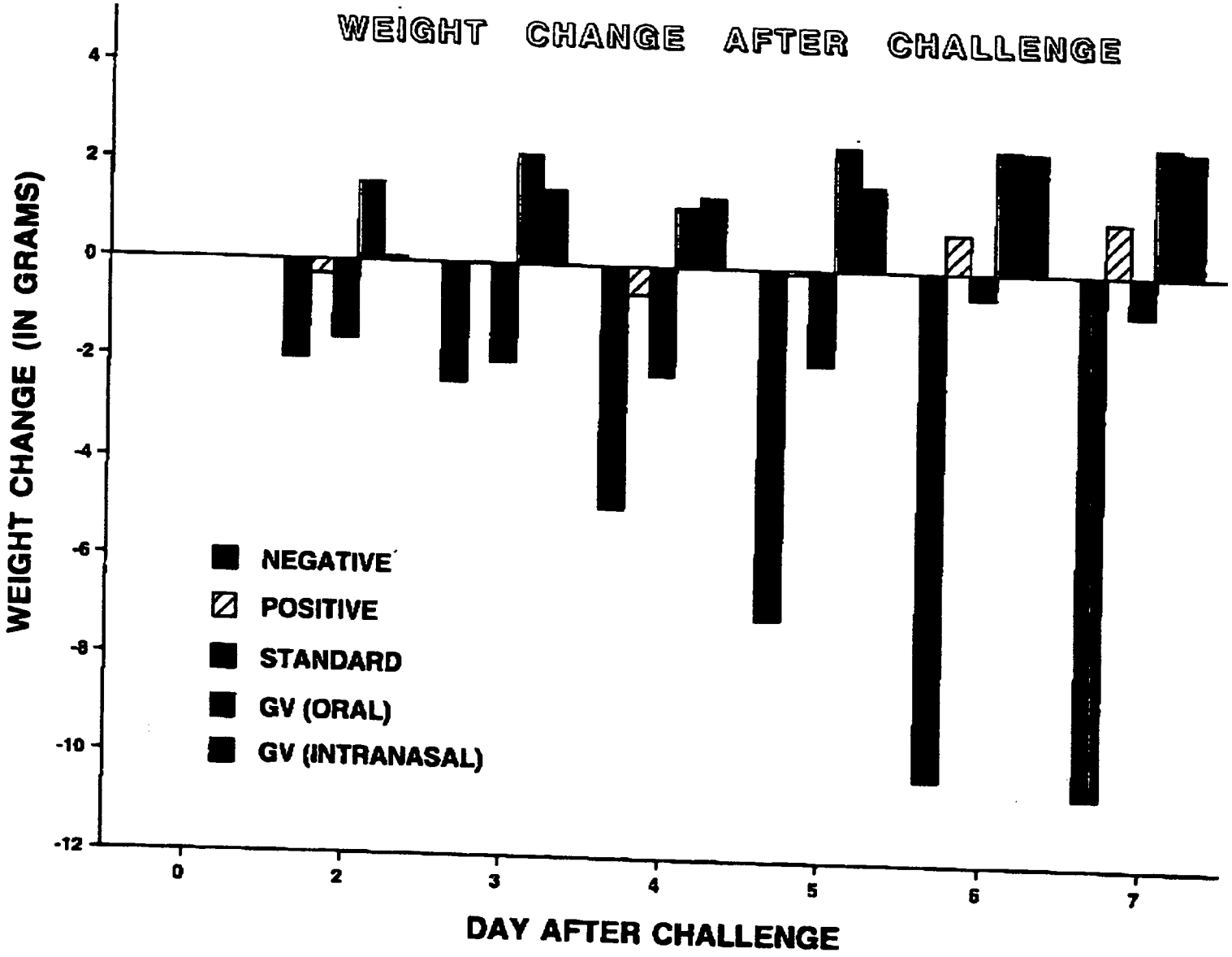
11/24/96-12/1/96- No mice looked ill or decreased in weight measurements or had ruffled fur-all signs of illness in mice. there for the vaccines are relatively safe.

1/3/96-1 mouse from the SIV vaccine died. I also think that this is due to anesthetic.

1/6/97-2 mice died in the Negative Control group. I think they died of the virus, proving that this is lethal. The other mice in this group has symptoms of illness ex. ruffled fur, weight loss, etc.

1/7/97- 1 mouse died in the Negative Control group. I think it has the same reason of death as the ones before.

1/9/97- 1 mouse died in the Negative control group. Same reasons as the ones before.


WEIGHT CHANGE AFTER CHALLENGE
WEIGHT CHANGE (IN GRAMS)
4
2
0
-2
-4
-6
-8
-10
-12
NEGATIVE
POSITIVE
STANDARD
GV (ORAL)
GV (INTRANASAL)
0
2
3
4
5
6
7
DAY AFTER CHALLENGE

WEIGHT LINE GRAPH